BIOE 372 BIOMECHANICS

Instructor: Herbert Levine herbert.levine@rice.edu BRC 1005
TAs: TBA
(please use "BIOE 372" in subject line when emailing)

Meeting Time: 9:25 am – 10:40 pm Tuesday and Thursday
Classroom: Bioscience Research Collaborative, room 282
Office Hours: 3-4 pm Monday and Wednesday and by appt. – email me to schedule
TA Hours: To Be Decided
Prerequisite: MECH 211. However, since many of you took this course more than a year ago, the initial portion of the course will involve reviewing the fundamentals of Statics and placing this information in context to biomechanical analyses.

Course Content: The objectives of this course are to introduce and analyze biomechanical principles using stress and strain, load and deformation, and material properties. The course will focus both on basic mechanics and on specifically biological applications. The latter will include both cell biomechanics and mechanics at the more macroscopic scale of tissues and skeletal muscles.

Class Materials: The class website is on Owlspace - login with your Rice ID: https://owlspace-ccm.rice.edu/portal/site/BIOE-372-001-Sp15. You need to be registered for class and login with your Rice ID to have an access to class materials. Contact TAs if you have a problem. The syllabus, any additional readings, exam schedule, homework assignments and solutions, and term paper information will be posted on the website as well. Emailed questions that are relevant for all class participants will be documented in the list of announcements on the website (these may be developed into a FAQ if needed). Please check this list before emailing your question. You will receive announcements in your email once new materials are uploaded to the website.

Important note regarding handouts

· Lectures will be given using the board and occasionally using handouts.
· Please bring your textbook to class, as we will often be working through some of the diagrammed problems in the text
· When there are handouts of material for the upcoming lecture (mainly illustrations), these will be posted in advance whenever possible and that you will be notified by email. These will not actually be handed out in class. You will be responsible for bringing those materials.
· Even when lecture material handouts are prepared, they will NOT contain all the material discussed in the lecture, so they are not a substitute for

attending class.

Textbooks: Statics and Mechanics of Materials, 3rd ed. by Hibbeler (Pearson/Prentice Hall)

- If you choose to use a different edition, it is your own responsibility to make sure you do the correct homework problems (assigned or modified from the 3rd edition of the textbook).
- See the schedule for the dates we will be covering the different chapters of the textbooks.
- Supplementary material will be handed out, especially when we deal with specifically biomechanical topics

Grading will be based on:

Homework assignments (8)	20%	
Exams (3)	60%	In-class, closed book
Team Research Proposal	20%	

Cell Phone and Laptop Policy: Laptops and tablets are only allowed to be ON if lecture notes are being typed. Instructor and TAs reserve the right to check these notes in such case. Cell phones must be turned off.

Final Course Grades (A, B, etc.) will be determined by the distribution of grades in the class, but you will not receive a letter grade lower than your average numerical grade (A=92-100, A-=90-91, B+=88-89, B=82-87, B-=80-81, etc., Pass = 60 and above). Depending upon the class average, **there may be a curve but this is not guaranteed.** Top 2-3 students in the class will get A+. These grades reflect student performance on the assignments turned in. If assignments totaling 20% or more of the final course grade (more than 3 homeworks, any exam, or report) are not turned in, the instructor retains the right to fail the student for the course.

Types of assignments:

· **Homework sets.** These will be due one week after they are assigned unless otherwise noted. No homeworks will be dropped.

· **Team research proposal (TRP).** You and 3 partners (team of 4) will select a real-world biomechanics problem and prepare an 8-page paper describing and justifying research that you propose to address this problem. More information and a detailed schedule will be provided at the beginning of the semester. The final team research proposals are due near the end of the finals period.

· **Exams.** There will be 3 in-class exams. You will have the whole class period to complete the exams. No open books allowed but you will be **allowed one new handwritten letter page of notes (letter format, both sides) per exam, in addition to your single note pages from**

the previous exams Make sure to bring a calculator for an exam!!! Any calculator can be used, but netbooks, tablets, and laptops are prohibited

Assignment Policy:

- ALL homework and team proposal milestones are due in class, at the START of class (9:25 am) on the date that they are due. As stated above, if assignments totaling 20% or more of the final course grade are not turned in, the instructors retain the right to fail the student for the course. No late homework will be accepted without permission of the instructor. If an assignment is turned in late without a valid excuse, the grade will be reduced 10% per day. If your assignment is late, you must write the number of days it is late on the first page (Honor Code). Valid reasons such as illness and family emergencies will be dealt with on an individual basis. No credit can be given for the homework after the key is published on Owlspace.
- Many of the homework problems assigned will be taken from the exact textbook above. If you choose to use an alternate version of the textbook it is YOUR responsibility to coordinate with a classmate to get the correct homework assignment. If you do the wrong homework problem, you will have to turn in the correct problem late.
- All assignments should be neatly prepared. It is expected that problem sets will be handwritten. Team research proposal assignments must be typed. Neatness and correct grammar are important. Showing your work on homework assignments is CRITICAL.
- The preferred way for you to turn in homework is HARD COPY turned in at the start of class. Electronic submission of TRP assignments as a doc or pdf file is acceptable if you are having printer difficulties. These electronic copies must be readable when printed in black-and- white. If you submit electronically, upload the file to Owlspace assignment space or dropbox – please do not email files to the instructor or TAs.

All assignments must show:

· The assignment number, student name(s), course number, and date

· The statement of the problem, significant detail about the methods used in the solution

· A clearly identified solution (put a box around final answers)

· If you used reference material other than the textbooks in the preparation of any and all work, proper citations should be included (author, title of book/article/webpage, publishing information/URL).

Regrade requests will be considered, but ONLY if you turn in your original assignment AND a neatly prepared document justifying why you believe why your answer is correct. Only the material in question will be regraded, so there is no risk in asking for a regrade, but you MUST justify your request with your own clear explanation of the answer.

Attendance Policy: Students are expected to attend all classes. Attending

class regularly and asking/answering questions will contribute to your in-class participation portion of the grade.

Attendance is mandatory at exams and presentations. Student choosing to miss one of these dates to attend another commitment must make up the exam at a time convenient to the instructors or the TAs within 1 week of the missed class. If you miss an exam without a documented excuse, a minimum 20% grade penalty will be imposed. If a convenient time cannot be established or the student chooses not to make up the exam, the student will receive zero points for this particular exam in the final course grade.

Illness and family emergencies are valid excuses and will be dealt with on an individual basis. Contact the instructor immediately as soon as an emergency arises. If you choose to miss a day, planning ahead will help. You can have another student turn in your homework for you. You are also responsible for obtaining missed lecture notes from your classmates so that you can review for the exams.

TA sessions are optional, but strongly encouraged. The TAs will be available for review sessions (indicated above) to go over previous homework assignments and to answer questions about current homework assignments and upcoming exams.

Disability accommodations: Any student with a documented disability seeking academic adjustments or accommodations is requested to speak with me during the first two weeks of class. All such discussions will remain as confidential as possible. Students with disabilities will need to also contact Disability Support Services in the Ley Student Center.